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A PSYCHOLOGICAL STUDY OF BACKCOUNTRY RECREATION SATISFACTION: RECREATION CHOICE AND EVALUATION AS DECISIONMAKING: FINAL REPORT OF A PILOT INVESTIGATION

A Psychological Study of Backcountry Recreation Satisfaction: Recreation Choice and Evaluation as Decisionmaking

Final Report of a Pilot Investigation

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between

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and

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by

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INTRODUCTION

Ever since Wagar (1966) hypothesized that the quality of recreation experience is dependent upon how well that experience satisfies the needs that motivate it, the concept of satisfaction has held a central position in the theoretical structure of recreation research. This concept has already been examined extensively in such fields as industrial and organizational psychology and marketing and consumer research, where investigators have been concerned with the evaluation and improvement of organizational production processes. These researchers have explored the implications of the satisfaction concept for developing methods of: 1) monitoring and increasing worker or management productivity; 2) improving the quality and marketability of a product; and 3) improving the qualify of life of the worker or consumer (see, for example, Wanous and Lawler 1972, Lawler 1973, and LaTour and Peat 1979). In a similar vein, recreation researchers have pursued examinations of the satisfaction concept with the implicit assumption that it might be potentially useful as an index for monitoring the effectiveness of outdoor recreation management (or evaluating the quality of the recreation experience produced) and also for ascertaining the contribution of recreation participation to the quality of life of recreationists (e.g., Hendee 1974, Driver and Brown 1975, Dorfman 1979).

Many of the significant findings and issues that can be gleaned from these separate but related bodies of research were reviewed in an earlier paper by the present author (Harris, Unpublished). In addition, that paper sought to extend the current conceptualization of satisfaction by more explicity hypothesizing the relation of that construct to other elements of the cognitive process by which satisfaction is assessed.

The purpose of the present paper is to report the findings of an exploratory study that sought to examine the validity of that extended conceptualization.

In the next section, a brief statement of the theoretical basis of the study is given and the major hypotheses tested will be presented. Then a short section describes the research methods employed, followed by a presentation and discussion of the findings of the research. Finally, this report is concluded with a statement of the implications of the current research for current management efforts and for future research.

THEORY AND HYPOTHESES CONCERNING RECREATION SATISFACTION

An Expanded Model of Recreation Satisfaction

As this author's earlier review of those theories and recent studies focusing on the concept of satisfaction noted, the satisfaction construct has been examined predominantly as an explanatory variable rather than as a dependent one requiring measurement and study. Treated as almost a metatheoretical concept, it has been frequently used but seldom defined or rigorously examined.

Several recreation researchers, however, have contributed to a theory of recreation satisfaction (Bultena & Klessig 1969, Driver and Tocher 1970, Stankey 1972), expressing need satisfaction in terms of the discrepancy approach implicit in the theory of Driver and his associates. According to their model, satisfaction is determined by the differences between the actual outcomes a person receives and some other outcome level. Recreation behavior theory posits that the discrepancy is between both desired and expected levels of recreation experience outcomes and those actually received. Thus the extent to which the recreation environment enables the individual to realize the desired and expected consequences of an activity and thereby derive satisfaction from it determines the

quality of his or her recreation experience.

Despite this initial development of theory, few efforts have been made to empirically validate it or to refine or elaborate it conceptually. Much of the research done to date has incorporated the satisfaction construct with a simple affective definition and single Likert scale measure, giving little attention to more complex conceptualizations that take account of past experiences, preferences, desires, and expectations. Failure to find intuitively consistent relationships between overall satisfaction and other variables has given rise to the charge that satisfaction is not a useful criteria for monitoring and evaluating recreation management (Heberlein and Shelby 1977, Shelby 1980); yet that failure could in fact be due to the lack of any accurate conceptual models of the evaluative process involved and the lack of valid measures of the outcomes of that process.

Efforts have been made, however, to more adequately explore the complexities of the satisfaction model. They include those of Peterson (1974), Harris (1978), and Dorfman (1979). The general approach of these studies has been: 1) to obtain ratings of recreation participant's perceptions and expectations of and preferences for different conditions or features of the recreation setting; then 2) to investigate those relationships and discrepancies among these variables presumed to reflect the cognitive calculus with which participants assess their satisfaction. These efforts have met with mixed success and perhaps raise as many questions as they answer, methodologically as well as substantively (see Harris Unpublished for a review of some of the questions and problems posed by these studies).

The present study clearly represents an extension of these studies, although the research questions and related hypotheses it addresses reflect an effort to elaborate upon, and thus render more accurate, the general model of satisfaction underlying the earlier studies.

While it may prove difficult to operationalize and test a comprehensive conceptual model of satisfaction, the development of such a model can help to structure and advance thought on the subject. A model is presented here (see Fig. 1) that borrows from comparison level theory (LaTour and Peat 1979; see Harris Unpubl. for a discussion of this theory) as well as other models of satisfaction developed in recreation research. This model proposes that the satisfaction with any product (e.g., a recreation experience) has its basis in the aspirations (or desires) of the individual motivating him or her to consume that product (those aspirations are expressions of the psychological need-state of the individual as well as the social and environmental presses influencing him/her; these and other antecedent or influential conditions are ommitted from the model for the sake of simplicity but will be mentioned when relevant). The individual's aspirations are "filtered" through and modified by his expectations in determining the standard or comparison level against which actual outcomes are evaluated (the solid arrows in the model can be interpreted as meaning "lead to" or "influence", while the dashed arrows are indicative of the moderating role of expectations). The individual's expectations are based on knowledge from personal experience (one has recently been to a particular area), the experience of others (a friend has been to a particular area recently), and the reputed attributes of a particular outing (e.g., the weather forecast, information about the area published in a trail or camping book, etc.). Expectations about the products (or recreation experiences) available in cerntain areas serve to ensure that aspirations for certain behaviors are bounded by reality. Expectations prescribe the range of possible outcomes that can realistically be desired.

The combined effect of aspirations and expectations not only provides a theoretical basis for understanding the motivation to choose a particular behavior but also a logical standard for evaluating the success of that behavior. The interaction of aspirations and expectations dictates the comparison level or

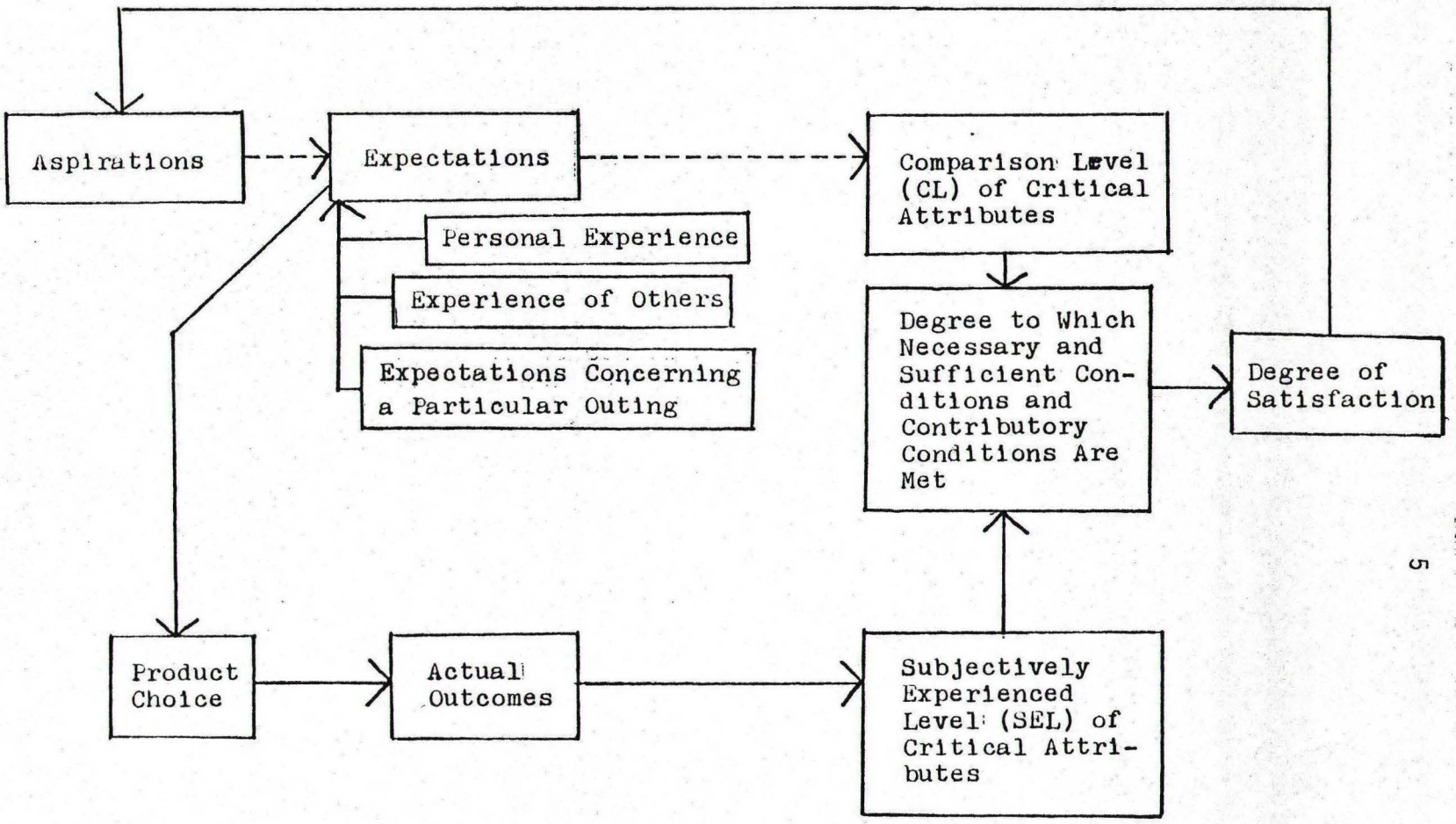
Aspirations
Expectations
Personal Experience
Experience of Others
Expectations Concerning a Particular Outing
Comparison Level (CL) of Critical Attributes
Degree to Which Necessary and Sufficient Conditions and Contributory Conditions Are Met
Degree of Satisfaction
Product Choice
Actual Outcomes
Subjectively Experienced Level (SEL) of Critical Attributes

Figure 1. A Model of Consumer Satisfaction

Fig. 1

standard with which an individual evaluates the subjectively experienced attributes of a particular recreation experience. The attributes experienced are a function of the actual outcomes of a particular outing, which are, in turn, a function of the individual's choice of product (or recreation experience). That choice is made on the basis of the aspirations and expectations informing and guiding the individual.

A critical feature of this model is that the degree of satisfaction an individual derives from his/her choice of a recreation experience is not simply the result of a comparison between the comparison and subjectively experienced levels of setting attriubes. Rather, it is a function of the degree to which necessary and sufficient attributes of the recreation setting are met. A basic premise here is that certain conditions for a particular type of recreation experience must be met if the character of that experience is to be maintained; a threshold level of certain attributes must be achieved (a minimal level if the condition is a positive one and a maximum level if the condition is a negative one). An obvious example of necessary and sufficient conditions for developed camping might be the provision of adequate camp sites (i.e., flat terrain, sufficient shade) in a natural setting. It is hypothesized that these conditions constitute "macrofactors" influencing recreation satisfaction; such factors are grosser, more obvious attributes of a recreation area that are more critical in the pre-trip choice process than in any post-trip evaluation of the area.

In addition to necessary and sufficient conditions, one might also theorize that contributory conditions exist which augment or detract from one's satisfaction. While such "microfactors" are neither necessary nor sufficient conditions for deriving satisfaction from a recreation outing and do not play a role in the recreationist's decisionmaking, they substantially influence one's post-consumption evaluation and thus the degree of overall satisfaction one experiences.

Microfactors affecting satisfaction with a wilderness hike might include encountering loud and inconsiderate people, finding litter, seeing a particularly beautiful cloud formation, and the like.

One might suggest that the role of expectations is more complex than suggested in previous models of satisfaction, given the two types of conditions described above. Expectations for necessary and sufficient conditions are likely to be more accurate and more general, since these conditions are considered in the choice process, than expectations for microfactors - and are thus more readily fulfilled. Microfactors, in contrast, include setting attributes that may not even be considered until they are actually experienced and for which, as a result, no expectations are held. If such an attribute is experienced as a positive one, the lack of expectations for it could result in an experience of surprise which could greatly heighten one's satisfaction and conversely for a negative one.

The Assessment of Recreation Satisfaction as a Decisionmaking Process

One unexplored approach to theorizing about recreation satisfaction is one utilizing descriptive decision theory, whereby conceptual models describing how people make choices are used to derive a better understanding of how outdoor recreationists assess their satisfaction with a particular recreation experience. A basic premise of this approach is that recreationists evaluate an experience in making that assessment; that is, they experience and then judge the quality of a recreation setting. Central to such a judgement is an appraisal of those conditions, or attributes, of the setting that serve as a critical input to that experience.

Visitor evaluation is thus conceived here as a post-hoc decisionmaking process to which decision theory could be applied. An underlying assumption of

this approach is that models of multi-attribute decisionmaking can be used to describe the evaluative processes by which recreationists assess their satisfaction with an experience. Rather than choosing among alternative settings on the basis of a comparison of their setting attributes, as is the case with recreation choice behavior, recreationists making a post-experience evaluation of their satisfaction compare the attributes of the experience setting with some standard of comparison, such as expectations or preferences. One hypothesis of this research is that different recreationists use processes described by different types of decisionmaking models, such as compensatory and noncompensatory, to consider setting attributes and evaluate the experiences those attributes, among other inputs, produce (see Figure 2).

Past studies based on psychological theories of satisfaction have assumed that the evaluative process employed in assessing satisfaction with an overall recreation experience reflects a compensatory, multi-attribute model of decisionmaking. Multi-attribute decision models postulate that an individual's decision process involves a consideration of a number of attributes when that individual is choosing among possible alternatives. These models have been categorized as either compensatory or noncompensatory.

Compensatory model. This model is the best-known and most widely used and studied category of decisionmaking models; it underlies such common statistical decision techniques as regression and has been used to operationalize attitude and motivation theories. Compensatory models assume that the decisionmaker makes an interattribute comparison, weights the various setting attributes according to their importance, and then derives a single summated value representing the utility or attractiveness of an alternative.

Noncompensatory model. Unlike compensatory decision models, noncompensatory models do not involve interattribute comparisons. While compensatory models

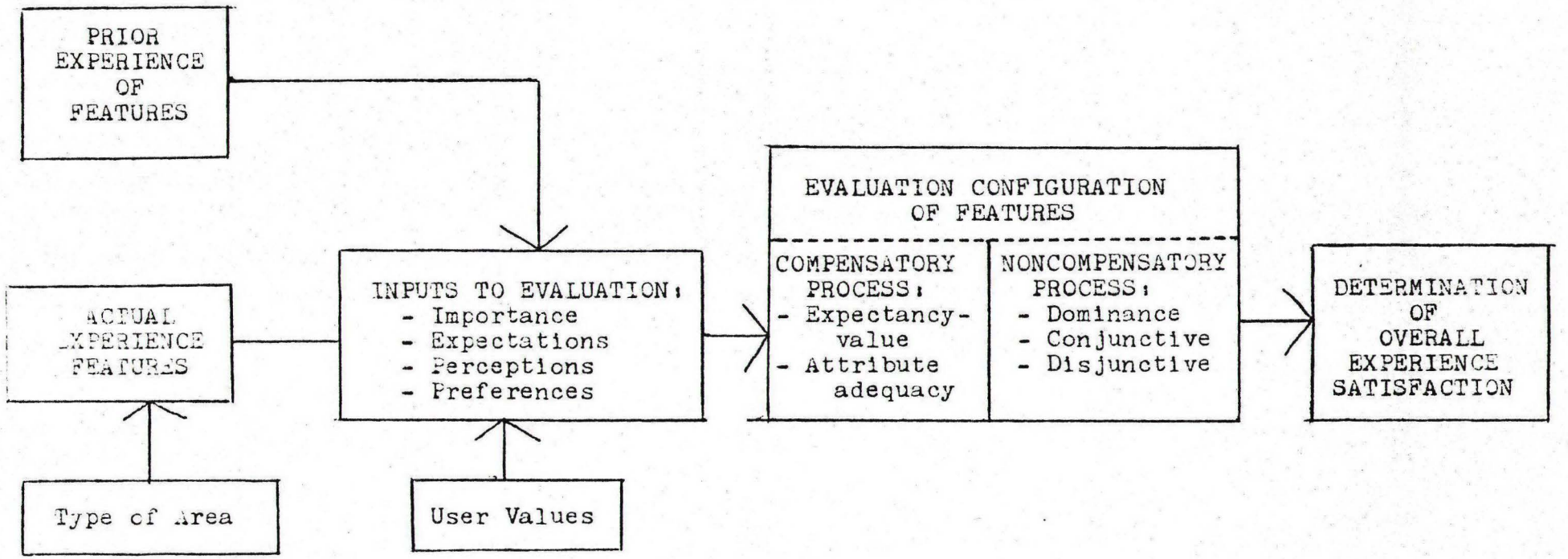

Figure 2. Model of Post-experience Evaluation.

permit the presence of one attribute of an alternative to compensate for the lack of another, noncompensatory models do not permit such trade-offs between attributes to influence choice. Since the decisionmaker considers particular attributes in choosing an alternative, an alternative may be rejected for failing to measure up on one particular attribute, even though the alternative is desirable in terms of all its other attributes. Alternatives are thus compared on an attribute by attribute basis.

Two types of noncompensatory models (adopted from Coombs et al. 1955) were considered in the present research. One was a conjunctive model, whereby an individual's perceptions of all setting attributes must meet those minimum thresholds (in the case of positive items) necessary for deriving overall satisfaction. For example, a fairly nondiscriminatory hiker might only require being moderately satisfied with all setting attributes to be satisfied overall with his/her experience. The second type of noncompensatory model was a variation of a dominance-disjunctive model, whereby an individual must be highly satisfied with the attributes that are most important for deriving overall satisfaction. For example, a highly discriminating hiker might be most concerned with experiencing a great deal of scenic beauty and few other people; as long as their hike is satisfactory on these salient attributes, the hiker will be satisfied overall, regardless of whether any other setting attributes are satisfactory.

RESEARCH METHODS

Survey Design and Administration

Two cross-sectional self-report surveys were administered to a sample of forest backcountry hikers in three Colorado wildland areas (Lory State Park; Greyrock Mountain, Arapahoe-Roosevelt National Forest; and Rawah Wilderness, Arapahoe-Roosevelt National Forest) during summer 1980. Approximately 450 hikers were contacted at trailheads over 4 consecutive weekends in late July - early August. These hikers were asked to complete a pre-trip questionnaire to obtain their preferences and expectations concerning the levels of 15 recreation setting attributes (see Appendix A for copies of the survey instruments). This set of attributes was selected on the basis of past research indicating their importance to hikers' satisfaction with Colorado wildland settings (Allen 1979). The users also indicated the minimum (maximum) amount of each positive (negative) attribute they could experience and still be satisfied with their trip, thereby providing a satisfaction threshold level for each attribute. In addition, if they indicated they helped make the decision to come to the area, users rated the importance for choosing the area of these setting and other choice-related attributes (ones assumed to be macrofactors).

Refusals and failure to propoerly complete this initial survey instrument resulted in a sample of 392 users to whom a post-trip questionnaire was mailed within two weeks after their hiking trip. Of these users, approximately 120 (31%) failed to return the post-trip instrument or to complete it adequately. A major key-punching error further reduced the sample available for this preliminary analysis to 187 respondents [1/].

The post-trip questionnaire obtained a single-scale rating of overall satisfaction with a respondent's trip as well as ratings on the 15 setting

attributes concerning their importance as contributors to overall satisfaction, the level perceived for each, and the extent to which respondents were satisfied with each attribute. Data were also collected on other variables hypothesized to influence the above concepts and their relationships; these variables included the past experience of the hikers, the familiarity or novelty of the recreation site to them, and the recreational context of their experience (i.e., length of stay, nature of visit, etc.).

Data Analysis

The analysis of the data for the purpose of testing hypotheses related to the elaborated model of satisfaction required the calculation of discrepancy scores for: 1) preference and threshold levels; and 2) expectation and perception levels. Frequency statistics were calculated for all variables, and bivariate realtionships of interest were examined with Pearson correlation coefficients and multivariate realtionships with analyses of variance or regressions.

A somewhat complex analysis procedure was required to examine the hypothesis that different recreationists use evaluative processes described by different types of decision making models. The data were first used to classify a respondent as a compensatory or noncompensatory decisionmaker. Only the inference that people <u>might</u> be employing one or both of the noncompensatory models under study could be made, however, since data for an individual might meet the conditions for these models even though their decisionmaking process was actually a compensatory one.

To examine the possible use of <u>noncompensatory models</u>, tests were developed that determined if individuals met either or both of two rules based on the conjunctive and dominance-disjunctive models. To meet the rule for the conjunctive model, an individual's levels of perception of <u>all</u> setting attributes had to

equal or exceed those threshold levels established in the pre-trip questionnaire, and the individual had to positively rate their satisfaction with the overall experience. To meet the rule for the dominance-disjunctive model, an individual's satisfaction had to be high (i.e., 2, 3, or 4 on a scale from -4 to +4), and the individual had to positively rate their satisfaction with the overall experience. Individuals who failed to meet either of these rules were included in a subsample of individuals who could not be using noncompensatory models and thus were those most likely to be employing a compensatory model.

The compensatory model examined in this study was a linear additive one described with a multiple regression equation. Ordinary least squares regression analyses were performed on both total sample and subsample using respondents' rating of overall satisfaction as a criterion measure and their ratings of satisfaction with individual setting attributes as predictor scores. The basic logic here was that regression analysis of data from the subsample of hikers employing the compensatory model should result in a better fit of data than would be achieved with data from the total sample if a large number of individuals in that sample were using a noncompensatory decision model [2/].

Since satisfaction ratings on the idnividual attributes were in some cases moderately to highly inter-correlated, eight of the 15 original attributes were used as predictor variables: birds, other people, buzzing insects, trail signs, large mammals, steep trail sections, scenic beauty, and rules. To assess the agreement between different measures of attribute salience, the objective weights (regression coefficients) obtained for these attributes from the regression equation were compared with the means of subjective weights (defined as the importance of setting attributes) given to the attributes by the respondents.

Major Hypotheses of the Study

The major hypotheses examined in this study were derived from the theories outlined in the preceding sections. Given the exploratory nature of this research, these hypotheses were not all directly tested but rather guided the analysis of the data and structured the discussion of the resultant findings. The hypotheses included:

1. Macrofactors (time, distance, scenic beauty, etc.) will be more important determinants of choice but microfactors (number of people met, seeing wildlife, etc.) will explain more variance in satisfaction.

2. Experienced users place less importance on macrofactors in choosing an area and greater importance on microfactors, while no such distinction applies to inexperienced users.

3. Those setting attributes theorized to be positive (negative) ones and thus to have minimum (maximum) threshold levels will have preferences significantly different from threshold levels (higher for positive attributes and lower for negative ones).

4. The extent of the discrepancies between threshold levels and perception levels for positive (negative) attributes will be positively (negatively) related to satisfaction levels for those attributes.

5. The extent of the discrepancies between perception levels and expectation levels for positive (negative) attributes will be positively (negatively) related to satisfaction levels for those attributes.

6. Those attributes that are the least (most) preferred are not necessarily th ose that provide the least (greatest) satisfaction.

7. Individuals more experienced as hikers and for whom the familiarity of an area is an important choice variable will be characterized by less of a discrepancy between perceptions of and expectations for setting attributes than will other users.

8. More experienced users are no more or less satisfied than less experienced users.

9. Different recreationists use evaluative processes described by different types of decision models (compensatory and noncompensatory) to consider setting attributes and assess their satisfaction with a hiking trip.

RESULTS AND DISCUSSION

In this section, the results of an initial analysis of the data are presented and briefly discussed. This preliminary analysis provides little support for many of the hypotheses examined in this research. Some interesting (although unanticipated) findings have been made in the course of the analysis, however, and the patterns of disconfirmations that have emerged provide reasonable grounds for modifying the theories under investigation.

Setting Attributes

Frequencies and Bivariate Relationships

The frequencies (means and standard deviations) calculated for variables relating to the setting attributes under study are reported in Tables 1 through 4. In the first table, the importance of setting attributes theorized to be macrofactors and microfactors for the choice of an area and the satisfaction derived from it is compared (see Table 1). Contrary to the hypothesized relationships among these factors, microfactors (e.g., litter and inconsiderate people) were among the most important not only for satisfaction (ranking 2 & 3) but also for area choice (ranking 2 & 3). Macrofactors that one might hypothesize would be among the most important for area choice (e.g., reputation of area, number of other people, the newness or familiarity of an area) ranked lower (7, 8, 10 & 12) than these and certain other microfactors, although such critical macrofactors as scenic beauty and the distance travelled to reach an area were among the five most important choice factors (ranking 1 & 4). Conversely, several macrofactors (e.g., scenic beauty, trail maintenance, number of other people) were also among the most important factors for deriving satisfaction from an area (ranking 1, 15 & 16), while most microfactors were ranked lower. These findings would seem to indicate few distinctions can be drawn between

Table 1. A Comparison of Choice and Satisfaction Importance Ratings for Macrofactors and Microfactors, with Means, Standard Deviations, and Rankings

Attribute	Choice Importance			Satisfaction Importance		
	Mean[2]	S.D.	Rank	Mean[2]	S.D.	Rank
Scenic beauty (MA)[1]	5.35	0.83	1	5.44	.91	1
Inconsiderate people (MI)	4.19	1.85	2	4.53	1.63	3
Litter (MI)	4.14	1.90	3	4.76	1.49	2
Distance travelled (MA)	3.86	1.79	4		NA[3]	
Wildlife (MI)	3.83	1.65	5	See Birds & Large Mammals below		
Weather (MA)	3.71	1.73	6		NA	
Reputation of area (MA)	3.68	1.87	7		NA	
Number of other people (MA)	3.60	1.94	8	3.59	1.58	6
Resource damage (MI)	3.52		9	4.05	1.48	4
Novelty of area (MA)	3.36	2.10	10		NA	
Rules (MI)	3.13		11	2.90	1.68	12
Road quality (MA)	3.01		12		NA	
Familiarity of area (MA)	2.78		13		NA	
Steep trails (MI)	2.60	1.75	14	2.78	1.76	14
Fee (MA)	2.18	2.12	15		NA	
Opportunities to fish (MA)	1.51	2.02	16		NA	
Birds (MI)	See Wildlife above			2.52	1.74	15
Information (MI)	NA			2.87	1.67	13
Insects (MI)	NA			3.20	1.74	10
Trail signs (MA)	NA			3.53	1.64	7
Large mammals (MI)	See Wildlife above			3.22	1.70	9
Dogs (MI)	NA			3.43	1.96	8
Trail maintenance (MA)	NA			3.63	1.48	5
Large groups of people (MI)				2.93	1.78	11

1/ MA refers to a macrofactor; MI to a microfactor.

2/ Values are on a scale from 0 (Not Important) to 6 (Extremely Important).

3/ NA: Not assessed.

macrofactors and microfactors in terms of their importance for choosing a setting or salience for assessing satisfaction. Certain critical attributes (those that past studies, e.g., Harris 1978 and Allen 1979, have indicated contribute most highly to satisfaction or dissatisfaction with a setting) are of greatest importance both in choosing an area and assessing one's satisfaction with it.

An examination of the preference levels displayed in Table 2 confirms that these attributes are among those that are the most or least preferred. Scenic beauty is the most preferred ($\bar{x}$ = 5.86, on a scale from 0 - None-to 6 - A Great Deal), while litter and inconsiderate people are nearly tied for least preferred ($\bar{x}$'s of 0.67 and 0.68, respectively). As the satisfaction levels derived from the setting attributes and reported in Table 2 indicate, these same attributes are among the most satisfying. The perception levels also reported in the table suggest that this result is a function of the high levels of positive attributes that are actually experienced and low levels of negative attribures encountered.

Also of interest in this frequencies analysis is the rough-and-ready comparison of the mean threshold levels assigned to the various setting attributes. Attributes theorized to be positive (negative) contributors to satisfaction with a setting were assigned threshold levels with the question, "what is the minimum (maximum) amount of this attribute you could experience and still be satisfied?" These levels could then be compared with preference levels to determine if indeed threshold levels were less (greater) than perceived levels for items <u>theorized</u> to be positive (negative), thereby confirming that the attributes <u>are</u> positive (negative).

As Table 3 indicates, of those attributes which were assumed to be negative, respondents had the lowest tolerance levels for such attributes as inconsiderate people, litter, and dogs ($\bar{x}$'s of 1.33, 1.48, and 2.20, respectively).

Table 2. Preference, Expectation, Perception, and Satisfaction Levels for Setting Attributes, with Means, Standard Deviations, and Preference Ranking

Attribute	Preference		Expectation		Perception		Satisfaction	
	Rank	Mean[1/]	S.D.	Mean[1/]	S.D.	Mean[1/]	S.D.	Mean[1/]	S.D.
Birds	3	4.46	1.51	2.08	1.50	2.31	1.45	0.75	1.53
Information	5	4.06	1.59	3.34	1.30	2.74	1.75	0.95	2.04
Resource damage	13	1.23	1.92	2.86	1.52	2.27	1.35	0.76	1.98
Other people	10	1.56	1.55	2.17	1.89	3.30	1.42	0.89	2.15
Insects	12	1.24	1.52	2.85	1.47	2.11	1.59	1.54	2.02
Trail signs	4	4.41	1.60	3.28	1.61	3.00	1.60	0.87	2.15
Large mammals	2	5.28	1.06	3.69	1.46	0.67	1.36	-0.35	1.89
Litter	15	0.67	1.68	2.61	1.83	1.73	1.49	1.46	2.11
Inconsiderate people	14	0.68	1.62	3.67	1.38	0.86	1.43	2.08	2.11
Steep trail sections	7	3.36	1.38	2.08	1.70	3.23	1.38	1.66	1.72
Dogs	11	1.49	1.90	5.36	0.86	1.22	1.56	1.16	2.56
Scenic beauty	1	5.86	0.37	3.87	1.40	5.17	1.06	3.20	1.04
Trail maintenance	6	3.91	1.53	2.85	1.61	4.09	1.37	2.41	1.43
Rules	8	3.06	1.70	2.74	1.52	2.28	1.61	1.76	1.69
Large groups of people	9	1.82	1.60	3.60	1.67	1.27	1.66	1.13	2.10

[1/] Scale values: 0 (None) to 6 (A Great Deal)

[2/] Scale values: -4 (Very Dissatisfied) to 4 (Very Satisfied)

Table 3. Threshold Levels of Setting Attributes, with Means and Standard Deviations

Attribute	Maximum level (Negative Attribute)		Minimum level (Positive Attribute)	
	Mean[1/]	S.D.	Mean[1/]	S.D.
Resource damage	2.73	1.35	--	--
Other people	3.23	1.26	--	--
Insects	2.96	1.43	--	--
Litter	1.48	1.30	--	--
Inconsiderate people	1.33	1.45	--	--
Steep trail sections	4.32	1.34	--	--
Dogs	2.20	1.82	--	--
Rules	3.52	1.59	--	--
Large groups	3.00	1.64	--	--
Birds	--	--	2.26	1.52
Information	--	--	2.05	1.58
Trail signs	--	--	2.28	1.54
Large mammals	--	--	2.07	1.76
Scenic beauty	--	--	4.27	1.50
Trail maintenance	--	--	2.37	1.55

[1/] Scale values: 0 (None) to 6 (A Great Deal).

Interestingly enough, although congestion is assumed to be an attribute that detracts from backcountry hiking experiences, this sample of hikers expressed a tolerance for a fairly high level of other people ($\bar{x}$ = 3.23) in comparison with most of the other negative attributes. Also interesting are the threshold levels reported for the positive attributes, all of which are low (with the exception of scenic beauty), indicating that these factors may not be that critical as contributors to satisfaction. Only a large degree of scenic beauty is indicated to be a prerequisite for satisfaction, a finding consistent with its rating as the most important of all attributes for area choice and experience satisfaction.

The mean differences, moreover, between preferences and threshold levels (preference level - minimum level for positive attributes and maximum level - preference level for negative ones; see Table 4) provide a strong indication that attributes theorized to be positive or negative were indeed so for the sample as a whole. For example, individuals should report preference levels higher than minimum threshold levels for a supposedly positive attribute such as scenic beauty and maximum threshold levels higher than preference levels for a supposedly negative attribute such as resource damage. As Table 4 reports, the mean differences were positive and statistically significant ($p < .001$) for all attributes, providing confirmation for the theorized direction of affect associated with each.

A comparison of the threshold levels with the levels of the attributes actually perceived and the satisfaction levels derived from them provides further support for the internal consistency of the hiker's responses to the attribute-related items. The most satisfying attributes included scenic beauty ($\bar{x}$ = 3.20), trail maintenance ($\bar{x}$ = 2.41), inconsiderate people ($\bar{x}$ = 2.08), and steep trail sections ($\bar{x}$ = 1.66). For a positive item like scenic beauty, although the threshold level was quite high ($\bar{x}$ = 4.27), the perception level was

Table 4. Differences Between Preference and Threshold Levels for Positive and Negative Setting Attributes, with Difference Means and Standard Deviations

Attribute	Positive Attributes: Preference Level - Minimum Level		Negative Attributes: Maximum Level - Preference Level	
	Mean Difference[1/]	S.D.	Mean Difference[1/]	S.D.
Birds	2.13	1.87	--	--
Information	1.97	1.80	--	--
Trail signs	2.17	1.76	--	--
Large mammals	3.22	1.86	--	--
Scenic beauty	1.61	1.50	--	--
Trail maintenance	1.48	1.90	--	--
Resource damage	--	--	1.46	2.35
Other people	--	--	1.64	1.73
Insects	--	--	1.68	1.83
Litter	--	--	0.82	1.98
Inconsiderate people	--	--	0.69	1.89
Steep trail sections	--	--	0.98	1.47
Dogs	--	--	0.75	2.01
Rules	--	--	0.48	1.81
Large groups of people	--	--	1.12	1.87

[1/] All differences are statistically significant, p .001.

even higher ($\bar{x}$ = 5.17). For negative items like inconsiderate people and steep trail sections, perception levels ($\bar{x}$'s of 0.86 and 3.23, respectively) are lower than the maximum threshold levels for those attributes ($\bar{x}$'s of 1.33 and 4.32, respectively).

A rough index was developed on the basis of the discrepancy between the threshold and perception levels; given the mnenomic name XSAT, it was based on the theory that the degree to which a perceived level of a positive (negative) attribute exceeded (was exceeded by) its threshold level should provide a cardinal indicator of the "extra" satisfaction derived from that attribute. The mean scores for these XSAT's are displayed in Table 5; the largest values are for such attributes as scenic beauty, trail signs, other people, and large groups of people. Interestingly, the first three attributes just named are also indicated to be the most important predictors in the regression equation providing the best fit of the total sample (that regression analysis is described later in this section of the report).

Further insight into the relationships between the variables discussed in the preceding paragraphs is provided by the correlations between the satisfaction levels for the setting attributes and such other variables as preference levels, perception levels, and such indices as XSAT and EXAC (see Table 6; the amount of discrepancy between an expectation and perception level for a given attribute; the degree to which that amount is positive (negative) for a negative (positive) attribute should be an indicator of the level of satisfaction that it provides). The XSAT's consistently provided the highest correlations of the two indices, although correlations for both were statistically different from 0 ($p < .001$) for nearly all attributes. The highest correlations, however, were obtained between satisfaction and perception levels, indicating that satisfaction with these attributes is primarily a function of the amount of those attributes

Table 5. Mean Scores of Setting Attributes on the Indices Termed XSAT's[1/] and EXAC's[2/], with Standard Deviations

Attribute	XSAT Mean	XSAT S.D.	EXAC Mean	EXAC S.D.
Birds	.06	1.87	-.23	2.01
Information	.69	2.01	.55	2.07
Resource damage	.72	2.18	.57	2.11
Other people	-1.40	1.95	-1.16	2.34
Insects	.90	1.78	.76	2.14
Trail signs	1.73	2.04	.30	2.10
Large mammals	.46	1.96	3.09	1.86
Litter	-.03	2.12	.84	2.32
Inconsiderate people	.87	2.13	2.82	2.08
Steep trail sections	-.25	2.09	-1.15	2.36
Dogs	.46	2.06	4.15	1.78
Scenic beauty	1.06	1.91	-1.33	1.66
Trail maintenance	.99	2.30	-1.24	2.01
Rules	1.19	2.20	.49	2.16
Large groups of people	1.77	2.43	2.31	2.48

1/ XSAT refers to the discrepancy between experienced levels and threshold levels that results in a "bonus" of satisfaction.

2/ EXAC refers to the discrepancy between expectations and perceptions; a positive EXAC score indicates expected levels were not experienced.

Table 6. Correlations of Satisfaction Levels with Preference, Perception, XSAT[1/], and EXAC[2/] Levels for Setting Attributes

Attribute	Satisfaction & Preference Correlation	Satisfaction & Perception Correlation	Satisfaction & XSAT Correlation	Satisfaction & EXAC Correlation
Birds	.03	.49*	.28*	-.40*
Information	.03	.65*	.51*	-.49*
Resource damage	-.03	-.55*	.36*	.31*
Other people	.10	-.60*	.53*	.47*
Insects	-.02	-.65*	.50*	.46*
Trail signs	.06	.53*	.49*	-.37*
Large mammals	-.04	.57*	.34*	-.41*
Litter	-.11	-.66*	.53*	.39*
Inconsiderate people	.04	-.61*	.43*	.44*
Steep trail sections	.18	-.15	.27*	.02
Dogs	.12	-.47*	.42*	.44*
Scenic beauty	.13	.83*	.44*	-.44*
Trail maintenance	.18	.45*	.34*	-.20
Rules	-.10	.18	-.01	-.12
Large groups of people	-.04	-.45*	.38*	.36*

1/ XSAT refers to the discrepancy between perception and threshold levels.

2/ EXACC refers to the discrepancy between expectation and perception levels.

* Significantly different from 0, $p < .001$.

actually experienced. Furthermore, these correlations were higher for those attributes indicated by one analysis or another to be more important for overall satisfaction. In contrast, satisfaction levels were not at all correlated with preference levels, lending weight to the conclusion that satisfaction with the attributes of a recreation setting depends not as much on preferences as on some interaction between the affective response to an attribute and the level at which it is experienced.

Multivariate Relationships

The multivariate relationships examined were primarily those centering on the relationship of the various ratings of the setting attributes to the overall satisfaction measure. A number of analyses of variance and multiple classification analyses were performed to determine the utility of such distinctions as decisionmakers (concerning where to take the trip actually taken) versus non-decisionmakers, experienced versus inexperienced hikers, and vacationers versus "day-trippers" for predicting overall satisfaction, as well as any interactions among these direct effects; but statistically significant relationships were not found for any of these potentially explanatory variables, and no further discussion concerning those analyses is merited.

One multivariate approach to analyzing the setting attributes ratings that was taken was factor analysis; factor analyses (using a principal components solution followed by a varimax rotation) were performed on the preference, satisfaction, and importance ratings of the setting attributes. Since the outcomes of these analyses were similar, only the factors derived for the preference and satisfaction ratings are reported here (see Tables 7 and 8). While 4 factors were derived when the preference ratings were factor analyzed and 5 factors were obtained from a factor analysis of satisfaction ratings, the similarities between the factors derived are obvious. In both analyses, a social,

Table 7. Factor Analysis: Preference Ratings

Factor 1: Social Attributes (Variance explained - 51.2%)

Source	Factor loading
Resource damage	.61
Other people	.63
Insects	.53
Litter	.84
Inconsiderate people	.82
Dogs	.56
Large groups of people	.44
Scenic beauty	-.34

Factor 2: Management Attributes (Variance explained - 21.3%)

Source	Factor loading
Information	.37
Trail signs	.43
Trail maintenance	.41
Rules	.24

Factor 3: Wildlife Attributes (Variance explained - 15.7%)

Source	Factor loading
Birds	.59
Large mammals	.56

Factor 4: Steep Trail Sections

Source	Factor loading
Steep trail sections	.51

Table 8. Factor Analysis: Satisfaction Ratings

Factor 1: Social Attributes (Variance explained - 54.4%)

Source	Factor loading
Resource damage	.73
Other people	.72
Insects	.32
Litter	.67
Dogs	.70
Large groups	.65

Factor 2: Management Attributes (Variance explained - 18%)

Source	Factor loading
Information	.48
Trail signs	.50
Trail maintenance	.32
Rules	.36

Factors 3, 4, & 5: Physical Attributes (Cumulative variance explained - 27.6%)

Factor 3 Source	Factor loading
Birds	.30
Large mammals	.57
Factor 4 Source	
Scenic beauty	-.32
Factor 5 Source	
Steep trail sections	.55

managerial, and physical factor (or combination of physical factors) was identified in a parallel of recreation theory that posits that these are the major dimensions of any outdoor recreation setting.

Scores were calculated for all respondents on each of the five factors obtained for the satisfaction ratings, and overall satisfaction was then regressed on these five scores to determine the importance of each factor for overall satisfaction. A multiple regression analysis was performed with the five factors as independent variables and overall satisfaction as the dependent variable. As Table 9 displays, these factor scores yielded a statistically significant regression equation ($p < .001$) but explained (after adjustment) only 14% of the total variance in the overall satisfaction rating. Obtained regression coefficients were the highest for the management ($b = .55$, $p < .05$) and social factors ($b = .21$, $p < .05$).

Other approaches to examining the predictive ability of the setting attribute ratings also employed regression analyses, most of which provided a better fit of the data than that using factor scores. For example, simply regressing overall satisfaction on the perception levels obtained for the setting attributes yielded a statistically significant regression equation ($p < .001$) whose adjusted R square ($\bar{R}^2 = .20$) indicated a better fit of the data (see Table 9). The results of the two most significant of these regression analyses (in a practical and theoretical as well as statistical sense) are discussed in the following section.

A Comparison of the Predictive Ability of Two Different Decision Models

A preliminary analysis of the data based on the two decision models described earlier in this report provided support for the hypothesis that visitors use different kinds of decision models. While the distribution of the respondents' ratings of overall satisfaction indicated that they all generally realized a high level of satisfaction with their recreation experience

Table 9. Statistically Significant*Regression Coefficients and Adjusted R Squares for Regressions of Overall Satisfaction on Attribute Satisfaction Factor Scores and Attribute Perception Levels

	Independent Variables	Regression Coefficients	Adjusted R^2
Regression #1:	Factor 2	.55	
	Factor 1	.21	.14
Regression #2, Perceptions of:	Scenic beauty	.46	
	Trail signs	.19	.20

* $p < .05$

($\bar{x}$ = 2.65 on a scale from -4 (very dissatisfied) to +4 (very satisfied), an application of the classification rules described earlier indicated that 42 respondents could be identified as compensatory decisionmakers.

Regressing overall satisfaction on the satisfaction levels for eight statistically-independent setting attributes yielded a statistically significant regression equation (approximately $p < .001$) which explained 35 percent of the variation in overall satisfaction ($\bar{R}^2 = .35$; see Table 10). A regression of overall satisfaction on the same predictors was run for the compensatory subsample, yielding a statistically significant regression equation (approximately $p < .001$) that explained 10 percent more variance than the total sample regression ($\bar{R}^2 = .45$).

An initial analysis of the data also indicated that, contrary to past findings of research on decision processes (Schmitt et al. 1977, Nysted et al. 1978), objective regression weights and subjective importance ratings of the most highly weighted attributes tended to agree, at least on an aggregate level (see Table 10). For both types of weights, the greatest relative importance was placed on the scenic beauty attribute ($b = .64$ for the total sample regression, $p < .1$) with the next greatest on the other people attribute ($b = .12$, $p < .1$).

The results of this initial analysis thus provide support for the hypothesis that different recreationists use different decisionmaking models when evaluating the influence of setting attributes on satisfaction with a recreation experience. The regression model provided a better fit of the data for those individuals whose survey responses indicated they probably use compensatory decision processes than for those who could be using either noncompensatory or compensatory processes.

Given that some hikers might be employing noncompensatory evaluation processes, it follows logically that individuals employing such processes may be

Table 10. Comparison of Regression Coefficients of Setting Attributes for Total Sample and Compensatory Subsample with Means and Ranks of Importance Ratings of Those Attributes.

Setting Attributes	Total Sample Coefficient	Compensatory Sample Coefficient	Importance Rating* (Rank)
Scenic Beauty	.64**	.62**	5.4(1)
Other People	.12**	.19**	3.6(2)
Trail Signs	.09**	.03	3.5(3)
Buzzing Insects	.05	.03	3.2(4)
Steep Trail Sections	.05	.18**	2.8(7)
Large Mammals	.03	.02	3.2(5)
Birds	.005	.12	2.5(8)
Rules	.003	.07	2.9(6)
Fraction of Explained Variance ($\bar{R}^2$)	.35	.45	--

* On a scale from 0 (Not Important At All) to 6 (Extremely Important).

** Statistically significant differences from 0, approximate $p < .1$.

generally insensitive to certain setting attributes. Confirming past findings (e.g., Allen 1979) not only that wildland hikers, in the aggregate, are satisfied with their overall experience, but also that scenic beauty and the presence of other people are the two attributes generally most critical to that satisfaction, the present study lends weight to the conclusion that recreationists' evaluation may often be insensitive to other less salient setting attributes.

Setting Attribute and Overall Satisfaction Analyses for Individuals Experienced as Hikers or Familiar with an Area

The sample of respondents was segmented according to the degree of their past experience as hikers (as indicated by the number of hiking trips taken in the past year) and also in terms of their familiarity of the area (as indicated by rating area familiarity to be an important choice factor). The former segmentation resulted in 3 groups of little (0 - 2 trips in the previous year), moderate (3 - 8 trips), and high hiking experience (9 or more trips); approximately one-third of the sample fell into each of these groups. Segmentation on the basis of area familiarity was accomplished by splitting the sample in two: about half the sample fell in a group placing little importance on area familiarity (not at all to somewhat important), while the remaining half deemed area familiarity highly to extremely important .

Oneway analyses of variance (see Nie et al. for a discussion of this procedure) were performed using the above hiker characteristics as independent variables on such dependent variables as the EXAC for each setting attribute (means for this index are reported in Table 5) as well as each setting attribute's importance for satisfaction and area choice. None of the intuitive, theoretical relationships hypothesized here were found. One might hypothesize that individuals more experienced or familiar with an area would have lower discrepancies

between their expectations (which should be more realistic and thus more accurate) and perceptions, but no consistent, statistically significant differences ($p < .05$) were found. Likewise, experienced users or those more familiar with an area could be expected to place less importance on the macrofactors of an area and greater importance on microfactors (given their greater knowledge of what macrofactors to expect and thus greater sensitivity to the influence of microfactors on satisfaction), yet again no such consistently statistically significant differences were found for choice or satisfaction ratings.[3/]

A difference between these groups that one would not expect to find, and which indeed was not found, was one in the overall satisfaction levels derived from a hiking trip. If users inexperienced in hiking or unfamiliar with an area have little idea of what to expect from a hiking trip, they should be easily satisfied, while one would not expect that more experienced hikers, who should be more selective in their recreation outings, would go to an area that would result in their being less than satisfied. Oneway analyses of variance confirmed that there was no statistically significant difference in the overall satisfaction of hikers familiar with an area ($\bar{x} = 2.69$) versus those unfamiliar with it; similarly, experienced hikers were not significantly more or less satisfied with their hiking trip than inexperienced hikers.

CONCLUSIONS AND IMPLICATIONS

A number of conclusions and implications can be drawn from this exploratory study of the evaluative process by which recreation satisfaction is assessed and the relation of that evaluative process to the decision process whereby a recreation setting is chosen. Perhaps one of the broadest yet most critical of the issues it raises concerns the research methods employed. While the

consistency in the sample's responses to interrelated survey questions provides support for the internal consistency of the theoretical structure on which those questions were based, the strength of certain relationships leads one to question the ability of the scales used to provide any but the grossest indicators of theorized relationships.

For example, the fact that the factors that emerged from the ratings of the setting attributes were the same for preference, importance, and satisfaction could indicate that respondents were cuing off of the most obvious characteristic of the attributes (whether they were physically, socially, or managerially related) and in so doing giving responses that reflected an inability to make any finer discriminations. A second result lending weight to this conclusion was the failure to find any of the hypothesized differences between experienced and inexperienced hikers, individuals familiar with the area and those unfamiliar with it, or day-hikers and vacationers. One would expect that at least some consistent differences in the expectations, preferences, and satisfaction levels for various setting attributes would be found for these groups.

The lack of any such differences causes one to question whether an attempt is not being made to measure reified constructs only crudely representing elements of a subconscious process too subtle to be adequately monitored with a verbally based instrument. Other possible explanations of this failure include: 1) people's cognitive processes are indeed as gross as this study's results would suggest (and thus the satisfaction with an attribute is predominantly a function of how much of it is experienced; the findings of the analyses centering on the possible use of simplistic evaluative models by at least a segment of the sample supports this reason); or 2) the question formats and attribute descriptions used in the survey instrument were sufficiently unclear or

ambiguous to provide only the grossest of cues to which people could respond.

Given these methodological reservations, the study nonetheless allows one to draw some interesting conclusions and raise some important questions. The finding that certain attributes are consistently indicated to be important determinants of user satisfaction by a variety of measures and analyses lends weight to their role as critical elements of the recreation setting. Attributes reflecting the scenic quality of an area (e.g., scenic beauty), the direct or indirect impact of other people on an experience (e.g., litter, inconsiderate people, number of other people), and the availability of information in a setting (e.g., information, trail signs) were indicated to be such critical elements not only by their importance-for-overall satisfaction ratings but also by the regression analysis for the total sample. A number of these attributes also received among the highest mean satisfaction ratings given for the setting attributes.

A related finding clearly having managerial implications was that positive setting attributes tended to have low minimum threshold levels assigned to them, while negative attributes <u>also</u> tended to have low <u>maximum</u> threshold levels. A conclusion that can be drawn from this finding is that people require only a small level of most positive attributes to be satisfied (with the exception of scenic beauty), while negative attributes are in fact the critical limiting factors for satisfaction. People express a low tolerance for such attributes as litter, inconsiderate people, and dogs. In fact, last-minute analyses (not reported in the results section of this paper) employing paired t-tests indicate that the discrepancies between preference and threshold levels for negative items are larger by a statistically significant amount ($p < .001$) than those for positive items. Thus, while current perception levels of dissatisfying attributes presently are below their low thresholds, thereby resulting in positive satisfaction levels for those attributes, they are, in fact, the

resource conditions that could detract most readily from the quality of the experience should perceptions exceed threshold levels. Hence, managers may need to be more concerned in the future with preventing negative setting qualities than with enhancing a setting with positive qualities.

Support for this conclusion is also provided by the results of analyses examining the use of different evaluative processes by different recreationists. As those results suggested, many recreationists' evaluation of a recreation setting may be sensitive to only the most salient of setting attributes; and the only influence on those salient attributes that managers can have is of a preventative or protective nature. A tentative management implication of those findings is that managerial efforts should perhaps reflect greater concerns for minimizing the social impacts of visitors and maintaining an area's ecological viability than for considering visitor preferences for less obtrusive site attributes (e.g., wildlife). If the majority of wildland users do use fairly simplistic evaluative processes involving consideration of only the most obvious setting attributes, some of which are largely independent of management actions (e.g., scenic beauty)[4/], managerial concerns over responsiveness to some visitor preferences for setting attributes in recreation planning may be of limited utility, especially if visitor satisfaction is a valid standard of experiential quality and the high degree of that standard found in this study is a widespread condition.

This generalization, however, reflects an interpretation of aggregated data that warrants qualification. Many forest visitors self-select an area and/or m may be effective decisionmakers who could be expected to be satisfied with their overall recreation experience; such factors may account for the high level of satisfaction derived by most of respondents from the recreation setting. A more complete accounting, however, of the numerous antecedent and intervening

factors possibly influencing visitors' satisfaction levels is beyond the scope of this analysis. Further analysis of the data is necessary to assess whether evaluative processes and salient attributes differ for different types of users in different types of settings.

Additional research is needed, moreover, to specify more precisely the different evaluative processes that visitors employ and to determine their relation to such factors as visitors' past experiences, processes for choosing a recreation setting, and motives for recreating. For example, hypotheses that could be investigated might be that hikers using a conjunctive type of process are more inexperienced wildland recreationists who are less able to discriminate among attributes in terms of their importance and the amounts of those attributes acceptable to them; they are thus more likely to utilize a "satisficing" type of evaluative process. More discriminating evaluators may be experienced hikers, whose evaluative processes are best described by a disjunctive model; if these hikers are not satisfied with attributes particularly salient to their evaluation of an experience, they are dissatisfied with their overall experience.

Examining differences in the evaluation of settings by specific types of users requires a disaggregated and thus more sensitive analysis than that performed here. Nonetheless, the present analysis, in providing a basis for examining evaluative processes, suggests the importance of better understanding user evaluation processes for guiding the use of behavioral inputs in managerial decisionmaking.

Perhaps the most critical substantive question raised by this research concerns the strength of the link between the concept of satisfaction as need-fulfillment and the quality of a recreation setting as determined by the character and condition of its attributes. The fact that more of the variance in a global measurement of satisfaction remains unexplained than is accounted for by the quality of and satisfaction with actual setting conditions leads one

to question whether that link is weaker than has been previously recognized. For the most part, consistent, theoretically supported realtionships among the preference, expectations, threshold, perception, and satisfaction levels for the setting attributes were found in this study, although the role of expectations and the distinction between microfactors and macrofactors were neither as clear-cut nor significant as originally theorized. Wildlife, for example, was identified as a microfactor; yet its high ranking for choice importance and low ranking for satisfaction importance (below many macrofactors) were the reverse of the hypothesized rankings, forcing one to reformulate the original conceptual model. Perhaps a key to this reformulation can be found in the weakness of the link between satisfaction with setting attributes and that with the overall experience.

It might be theorized, for instance, that there is only a minor relationship between satisfaction with a total recreation experience, as an affective gestalt rather than an aggregative outcome of an analytic evaluative process, and the satisfactions with setting attributes that are theorized to be assessed in that process. What is being suggested here is that the feeling of satisfaction, if indeed it reflects the fulfillment of needs, is only weakly related to the many and varied attributes of the setting, since most of these needs themselves are likely to be weakly related (at best) to setting attributes at any but the grossest level. Many of the elements of a recreation experience closely tied to the affective response it produces are totally unrelated to the setting (e.g., the companions with whom the setting is enjoyed, the weather, the amount of sleep or alcohol enjoyed the previous night, etc.). Because the choice of the type of area (in the present case, backcountry) predetermines for all but the most naive recreation user the general attributes of the setting, those elements that are tied to setting features are also predetermined to be satisfying; the recreationist is predisposed to be satisfied with the area, else he

wouldn't bother to visit it. Thus, expecting gestalt of an affective response to a total hiking experience or trip to be sensitive to relatively minor perturbations in the conditions of the backcountry setting seems to be unreasonable now that advantage of hindsight can be taken.

From such a perspective, the distinctions made previously concerning such concepts as microfactors and macrofactors and expectations concerning them are specious. The degree of expectations, while related to satisfaction, appears to be of minor importance in the broader process of need fulfillment and too fine a distinction for current measurement and practical application. Similarly, the distinction between macrofactors and microfactors appears now to be an artificial one; even where people respond to an attribute thought to be a microfactor as a macrofactor (wildlife), its absense appears to have little influence on overall satisfaction.

Methodological and managerial implications of all this are several. One of these is not that researchers like Heberlein and Shelby (1977) are right in saying that satisfaction is not a useful concept. Certainly even they would admit that, if experienced levels far exceeded threshold levels (in the negative sense) for critical attributes, people would become increasingly dissatisfied with the declining quality of the setting and thus their experience, to the point where they might cease to visit that area; those researchers have simply not monitored settings where those levels have been reached for critical attributes.

One implication is, however, that verbally based instruments used to monitor the recreation quality of a setting should focus on specific setting attributes and cease to attempt to measure global satisfaction levels that may reflect more than setting quality and may not reveal enough about marginal changes in the quality of critical setting attributes. As the results of this research suggest, the monitoring of threshold levels and such marginal changes in

perceptions would enhance the trouble-shooting capabilities of managers - enabling them to identify critical areas requiring preventative action - as well as enhance their ability to make the most productive uses of their increasingly scarce resources.

ENDNOTES

1./ While questions might be raised concerning the representativeness of the final sample on which the reported findings are based, the exploratory nature of the study suggests that these findings are still useful for shedding light on the relationship of the concepts under investigation as long as no claim is made about their representing any other larger population. Theoretically-related questions that might be raised, on the other hand, are valid; if, for example, the users who are most satisfied with their trip are also those most apt to respond to a mailed questionnaire, the sample studied may reflect a self-selection process that results in a biased sample whose responses yield invalid findings.

2./ To provide the strictest test possible, the total sample was used for comparison since hikers classified as possible noncompensatory decisionmakers might actually be compensatory decisionmakers.

3./ Several statistically significant ($p < .05$) differences were, in fact, found between the most and least experienced groups: expectations of the latter group were for higher resource damage levels ($\bar{x} = 3.11$ as opposed to $\bar{x} = 2.33$), while that group also placed greater importance on information ($\bar{x} = 3.30$ as opposed to $\bar{x} = 2.39$ for the experienced group) and trail maintenance ($\bar{x} = 4.04$ as opposed to $\bar{x} = 2.98$). The consistently significant differences, however, that were hypothesized were not found.

4./ This independence is, of course, relative. Scenic beauty is a setting attribute that may be somewhat enhanced by management actions to influence its perception. But the scenic potential of an area is largely a geographical and topological given that management can do little to alter.

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APPENDIX A

PRE-TRIP QUESTIONNAIRE

AR

This questionnaire is designed to learn how hikers feel about various aspects of forest areas. The information you provide can help to improve forest management decisions.

1) Did you make or help make the decision to come here to hike?
Circle one answer.

YES NO

a. If NO, go to question #2.
b. If YES,

We would like to learn why you chose this area to hike in. How important were each of the following features of the area in influencing your decision to use this trail? The seven numbers below define a range between the labeled end points. Please circle one number for each feature.

Features	How Important to Decision Not at all Important						Extremely Important	
a. The amount of entrance fee you had to pay	0	1	2	3	4	5	6	(1:2)
b. The reputation of the area	0	1	2	3	4	5	6	
c. The number of other people	0	1	2	3	4	5	6	
d. Fishing opportunities	0	1	2	3	4	5	6	
e. The distance you had to travel	0	1	2	3	4	5	6	
f. Litter	0	1	2	3	4	5	6	(1:7)
g. The newness of the area to you	0	1	2	3	4	5	6	
h. The wildlife	0	1	2	3	4	5	6	
i. The weather	0	1	2	3	4	5	6	
j. Rules regulating your behavior	0	1	2	3	4	5	6	
k. The scenic beauty	0	1	2	3	4	5	6	(1:12)
l. Evidence of resource damage (eroded trails, tree carving, etc.)	0	1	2	3	4	5	6	
m. Your past familiarity with the area	0	1	2	3	4	5	6	
n. Trail steepness	0	1	2	3	4	5	6	
o. The quality of road (gravel, paved, etc) to get there	0	1	2	3	4	5	6	
p. Inconsiderate (rowdy, loud, etc.) people	0	1	2	3	4	5	6	(1:17)
q. Any other features? (if yes, please list:)								
_____	0	1	2	3	4	5	6	(1:18-19)
_____	0	1	2	3	4	5	6	(1:20-21)

2) Please think about what your ideal hiking trip would be like and indicate how much of each of the following features you would like to find on that trip. The seven numbers below define a range between the labeled end points. Please circle one number for each feature; if you have no preference for the amount of a feature, circle the number 9.

Features	Amount of Feature You'd Like to Find: None						A Great Deal	No Preference	
a. Birds	0	1	2	3	4	5	6	9	(1:23)
b. Information (maps, regulations, etc.) at trailhead	0	1	2	3	4	5	6	9	
c. Evidence of resource damage (eroded trail, tree carving, etc.)	0	1	2	3	4	5	6	9	
d. Other people	0	1	2	3	4	5	6	9	
e. Buzzing insects (flies, mosquitos, etc.)	0	1	2	3	4	5	6	9	
f. Signs at trail junctions	0	1	2	3	4	5	6	9	(1:28)
g. Large mammals (deer, elk, etc.)	0	1	2	3	4	5	6	9	
h. Litter	0	1	2	3	4	5	6	9	
i. Inconsiderate (rowdy, loud, etc.) people	0	1	2	3	4	5	6	9	
j. Sections of steep trail	0	1	2	3	4	5	6	9	
k. Dogs running loose	0	1	2	3	4	5	6	9	(1:33)
l. Scenic beauty of area	0	1	2	3	4	5	6	9	
m. Trail maintenance (logs, boulders, etc. removed)	0	1	2	3	4	5	6	9	
n. Rules regulating your behavior	0	1	2	3	4	5	6	9	
o. Groups of 6 or more people	0	1	2	3	4	5	6	9	(1:37)

3) Now we want to learn about what you think you <u>will actually</u> find on the trip you are about to take. Please indicate how much of each of the following features you expect to find on your hiking trip. Circle one number for each feature listed below; if you have no expectations concerning a feature, circle the number 9.

		Amount of Feature You Expect to Find								
	Features	None						A Great Deal	No Expectation	
a.	Litter	0	1	2	3	4	5	6	9	(1:39)
b.	Sections of steep trail	0	1	2	3	4	5	6	9	
c.	Rules regulating your behavior	0	1	2	3	4	5	6	9	
d.	Dogs running loose	0	1	2	3	4	5	6	9	
e.	Evidence of resource damage (eroded trails, tree carving, etc.)	0	1	2	3	4	5	6	9	
f.	Information (maps, regulations, etc.) at trailhead	0	1	2	3	4	5	6	9	(1:44)
g.	Birds	0	1	2	3	4	5	6	9	
h.	Large mammals (deer, elk, etc.)	0	1	2	3	4	5	6	9	
i.	Signs at trail junctions	0	1	2	3	4	5	6	9	
j.	Inconsiderate (rowdy, loud, etc.) people	0	1	2	3	4	5	6	9	
k.	Scenic beauty of area	0	1	2	3	4	5	6	9	(1:49)
l.	Trail maintenance (logs, boulders, etc.) removed	0	1	2	3	4	5	6	9	
m.	Groups of 6 or more people	0	1	2	3	4	5	6	9	
n.	Buzzing insects (flies, mosquitos, etc.)	0	1	2	3	4	5	6	9	
o.	Other people	0	1	2	3	4	5	6	9	(1:53)

4) Listed below are features that commonly lessen people's enjoyment of a hiking trip. Please indicate what is the greatest amount of each of the features you could find and still be satisfied. Circle one number for each feature; if a feature has no effect on your satisfaction, circle the number 9.

For example, if you could find a "great deal" of other groups of people on your trip and still be satisfied with that trip, then you would circle the number 6.

Features	Greatest Amount You Could Find And Still Be Satisfied								
	None						A Great Deal	No Effect	
a. Evidence of resource damage (eroded trails, tree carving, etc.)	0	1	2	3	4	5	6	9	(1:55)
b. Other people	0	1	2	3	4	5	6	9	
c. Buzzing insects (flies mosquitos, etc.)	0	1	2	3	4	5	6	9	
d. Litter	0	1	2	3	4	5	6	9	
e. Inconsiderate (rowdy, loud, etc.) people	0	1	2	3	4	5	6	9	
f. Sections of steep trail	0	1	2	3	4	5	6	9	(1:60)
g. Dogs running loose	0	1	2	3	4	5	6	9	
h. Rules regulating your behavior	0	1	2	3	4	5	6	9	
i. Groups of 6 or more people	0	1	2	3	4	5	6	9	(1:63)

5) Listed below are features that commonly add to people's enjoyment of a hiking trip. Please indicate what is the least amount of each of the features you could find and still be satisfied. Circle one number for each feature; if a feature has no effect on your satisfaction, circle the number 9.

For example, if you could find a slight amount of scenic beauty on your trip and still be satisfied, then you would cricle the number 1.

Features	Least Amount You Could Find And Still Be Satisfied								
	None						A Great Deal	No Effect	
a. Birds	0	1	2	3	4	5	6	9	(1:65
b. Information (maps, regulations, etc.) at trailhead	0	1	2	3	4	5	6	9	
c. Signs at trail junctions	0	1	2	3	4	5	6	9	
d. Large mammals (deer, elk, etc.)	0	1	2	3	4	5	6	9	
e. Scenic beauty of area	0	1	2	3	4	5	6	9	
f. Trail maintenance (logs, boulders, etc. removed)	0	1	2	3	4	5	6	9	(1:72

ID:76-8

6) We would like to mail you a follow-up questionnaire to learn more about your hiking trip after you have completed it. Could you please give us your name and address for that purpose on the lines provided below?

1(1)
2-29 Name _____ ID:76-8

3 2-35 Street Address _____ ID:76-8

4 2-30 City, State, Zip _____ ID: 76-

POST-TRIP QUESTIONNAIRE

THIS QUESTIONNAIRE IS DESIGNED TO LEARN HOW HIKERS FEEL ABOUT VARIOUS ASPECTS OF FOREST AREAS.

First we would like to learn a few things about your general hiking experience.

1) How many times have you gone hiking since June 1979? (Write 0 if you haven't hiked at all). _____ times *(2:1-2)*

2) How many times since June 1979 have you hiked in each of the following areas? (Write 0 if not at all.)

Lory State Park	_____ times	*(2:3-4)*
Greyrock Mountain Trail	_____ times	*(2:5-6)*
Rawah Wilderness	_____ times	*(2:7-8)*

Now we would like to learn some things about the hiking trip you took when you completed our first questionnaire on the Greyrock Mountain trail.

IN ANSWERING THE REST OF THESE QUESTIONS, PLEASE THINK IN TERMS OF THAT SPECIFIC HIKING TRIP.

3) Please check the one main activity you engaged in during that trip. *(2:9)*

1. /_/ Camping
2. /_/ Fishing
3. /_/ Hiking
4. /_/ Photography
5. /_/ Other _____ (Please fill in)

4) If you camped, how many nights did you spend in the area?

/_/ Didn't camp /_/ 1 /_/ 2 /_/ 3 /_/ 4 *(2:10)*

5) Was the hiking trip you took part of a vacation of a week or longer?

1. /_/ Yes 2. /_/ No *(2:11)*

6) How far did you drive to get to the trailhead <u>on the day you hiked</u>?

_____ miles one-way *(2:12-14)*

7) In general, how satisfied were you with your hiking trip? The nine numbers define a range between the labeled end points. Circle the number which best describes your response.

Very Dissatisfied — *Neither Satisfied Nor Dissatisfied* — *Very Satisfied*

-4 -3 -2 -1 0 +1 +2 +3 +4 *(2:15)*

On our previous questionnaire, we asked you four different questions about specific features of the area you hiked into. We now would like to ask you three more questions about those same features. On all of the questions the numbers define a range between the labeled end points.

8) In this question we want to learn how satisfied you were with each of the features. Circle one number which best describes your response for each feature.

Features	How satisfied you were: Very Dissatisfied				Neither Satisfied Nor Dissatisfied				Very Satisfied	
a. Birds	-4	-3	-2	-1	0	+1	+2	+3	+4	(2:17)
b. Information (maps, regulations, etc.) at trailhead	-4	-3	-2	-1	0	+1	+2	+3	+4	(2:18)
c. Evidence of resource damage (eroded trail, tree carving, etc.)	-4	-3	-2	-1	0	+1	+2	+3	+4	(2:19)
d. Other people	-4	-3	-2	-1	0	+1	+2	+3	+4	(2:20)
e. Buzzing insects (flies, mosquitoes, etc.)	-4	-3	-2	-1	0	+1	+2	+3	+4	(2:21)
f. Signs at trail junctions	-4	-3	-2	-1	0	+1	+2	+3	+4	(2:22)
g. Large mammals (deer, elk, etc.)	-4	-3	-2	-1	0	+1	+2	+3	+4	(2:23)
h. Litter	-4	-3	-2	-1	0	+1	+2	+3	+4	(2:24)
i. Inconsiderate (rowdy, loud, etc.) people	-4	-3	-2	-1	0	+1	+2	+3	+4	(2:25)
j. Sections of steep trail	-4	-3	-2	-1	0	+1	+2	+3	+4	(2:26)
k. Dogs running loose	-4	-3	-2	-1	0	+1	+2	+3	+4	(2:27)
l. Scenic beauty of area	-4	-3	-2	-1	0	+1	+2	+3	+4	(2:28)
m. Trail maintenance (logs, boulders, etc. removed)	-4	-3	-2	-1	0	+1	+2	+3	+4	(2:29)
n. Rules regulating your behavior	-4	-3	-2	-1	0	+1	+2	+3	+4	(2:30)
o. Groups of 6 or more people	-4	-3	-2	-1	0	+1	+2	+3	+4	(2:31)

9) Please indicate how important each of the features were in influencing your overall satisfaction with your hiking trip. Circle one number which best describes your response for each feature.

Features	Importance for your overall satisfaction: Not at all Important						Extremely Important	
a. Birds	0	1	2	3	4	5	6	(2:33)
b. Information (maps, regulations, etc.) at trailhead	0	1	2	3	4	5	6	(2:34)
c. Evidence of resource damage (eroded trail, tree carving, etc.)	0	1	2	3	4	5	6	(2:35)
d. Other people	0	1	2	3	4	5	6	(2:36)
e. Buzzing insects (flies, mosquitoes, etc.)	0	1	2	3	4	5	6	(2:37)
f. Signs at trail junctions	0	1	2	3	4	5	6	(2:38)
g. Large mammals (deer, elk, etc.)	0	1	2	3	4	5	6	(2:39)
h. Litter	0	1	2	3	4	5	6	(2:40)
i. Inconsiderate (rowdy, loud, etc.) people	0	1	2	3	4	5	6	(2:41)
j. Sections of steep trail	0	1	2	3	4	5	6	(2:42)
k. Dogs running loose	0	1	2	3	4	5	6	(2:43)
l. Scenic beauty of area	0	1	2	3	4	5	6	(2:44)
m. Trail maintenance (logs, boulders, etc. removed)	0	1	2	3	4	5	6	(2:45)
n. Rules regulating your behavior	0	1	2	3	4	5	6	(2:46)
o. Groups of 6 or more people	0	1	2	3	4	5	6	(2:47)

10) We would also like to learn to what extent you actually did find each of the features. Circle one number which best describes your response for each feature.

Features	Amount of feature you actually found: None						A Great Deal	
a. Birds	0	1	2	3	4	5	6	(2:49)
b. Information (maps, regulations, etc.) at trailhead	0	1	2	3	4	5	6	(2:50)
c. Evidence of resource damage (eroded trail, tree carving, etc.)	0	1	2	3	4	5	6	(2:51)
d. Other people	0	1	2	3	4	5	6	(2:52)
e. Buzzing insects (flies, mosquitoes, etc.)	0	1	2	3	4	5	6	(2:53)
f. Signs at trail junctions	0	1	2	3	4	5	6	(2:54)
g. Large mammals (deer, elk, etc.)	0	1	2	3	4	5	6	(2:55)
h. Litter	0	1	2	3	4	5	6	(2:56)
i. Inconsiderate (rowdy, loud, etc.) people	0	1	2	3	4	5	6	(2:57)
j. Sections of steep trail	0	1	2	3	4	5	6	(2:58)
k. Dogs running loose	0	1	2	3	4	5	6	(2:59)
l. Scenic beauty of area	0	1	2	3	4	5	6	(2:60)
m. Trail maintenance (logs, boulders, etc. removed)	0	1	2	3	4	5	6	(2:61)
n. Rules regulating your behavior	0	1	2	3	4	5	6	(2:62)
o. Groups of 6 or more people	0	1	2	3	4	5	6	(2:63)